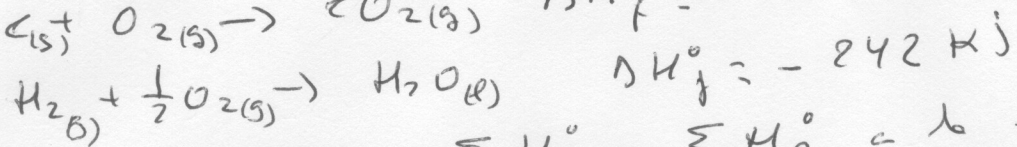
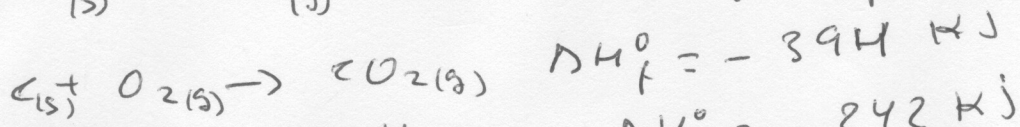
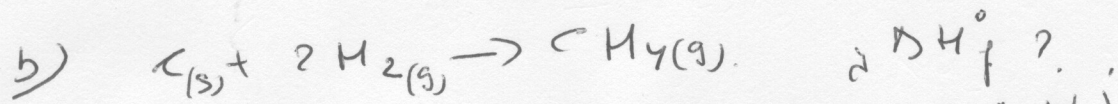
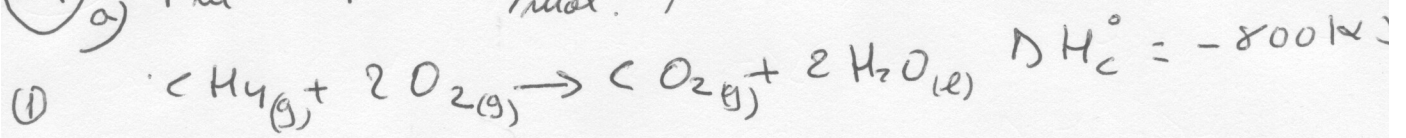


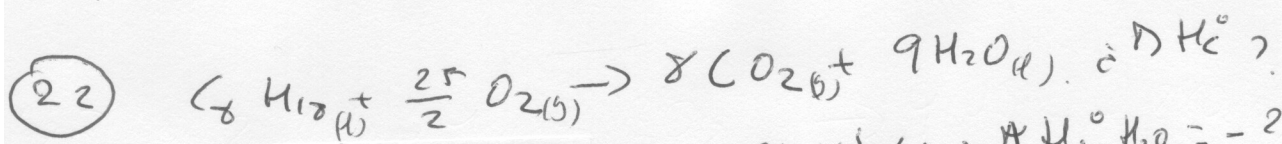
(21) a) $\rho_{CH_4} = 16 \text{ g/mol}$; $\Delta H_c^\circ = -50 \cdot 16 = -800 \text{ kJ/mol}$



Aplicamos $\Delta H_R = \sum H_P^\circ - \sum H_R^\circ$ a la ec. ①

$$-800 = [(-394) + 2(-242)] - [X + 0]$$

$X = -78 \text{ kJ/mol} \Rightarrow \Delta H_f^\circ CH_4$



a) Datos: $\Delta H_f^\circ CO_2 = -394 \text{ kJ/mol}$; $\Delta H_f^\circ H_2O = -242 \text{ kJ/mol}$
 $\Delta H_f^\circ C_8H_{18} = -250 \text{ kJ/mol}$

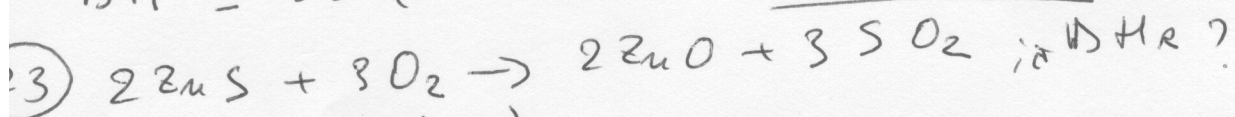
Aplicamos ΔH_R a la ecuación problema:

$$\Delta H_c^\circ = [8(-394) + 9(-242)] - [-250 + 0] = -5080$$

b) $m = \rho \cdot V$; $m = 800 \text{ kg/m}^3 \cdot 5 \cdot 10^{-3} \text{ m}^3 = 4 \text{ kg}$

$\rho_{C_8H_{18}} = 114 \text{ g/mol}$; $n \text{ mols} = \frac{4000 \text{ g}}{114 \text{ g/mol}} = 35 \text{ mols}$

$\Delta H = 35 \cdot (-5080) = -178.245 \text{ kJ}$



Datos: (hacer problema);

$$\Delta H_R = [2(-3949.3) + 3(-70.9)] - [2(-184) + 0] = -7672.4$$

c) $\rho_{ZnS} = 65.3 + 32 = 97.3 \text{ g/mol}$

$7672.4 \text{ kJ} - X$; $X = 670 \text{ kJ}$ calor desprendido